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Connecting with Canadians: Assessing the Use of Government On-Line

by C. Underhill and C. Ladds

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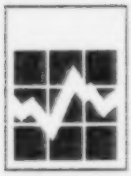

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Abstract

The 2005 Canadian Internet Use Survey (CIUS) included a module of questions on the extent and reasons for which Canadians use the Internet to connect with all levels of government – federal, provincial and municipal. This study examines the patterns of use for government online information and services among adult Canadians. A profile of government online users is developed in order to compare them with other Internet users and with non-users on the basis of various socio-demographic and Internet use characteristics. Concerns about Internet privacy and security are examined as potential barriers to the use of government online services. Finally, a multivariate logistic regression model helps to disentangle the various factors influencing the use of the Internet for government online activities.

Connecting with Canadians: Assessing the Use of Government On-Line

by C. Underhill and C. Ladds

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1. Context

In the little more than a decade since it was launched commercially, the Internet has dramatically changed the way many Canadians conduct their everyday activities, from viewing weather, news and sports, to banking and paying bills. Canadians are now going online for a wide variety of activities, including searching for information on topics ranging from genealogy to health care. The Internet has also become an important channel for Canadians to connect with their government. For instance, more than 2 million dwellings responded to the 2006 Census via the Internet, representing almost 20% of the initial response (Statistics Canada 2007). In addition, over 50% of Canadian tax filers used the Internet to file their 2005 federal income tax, either directly or indirectly through a tax preparation service (Canada Revenue Agency 2006).

To date, very little is known about the characteristics of government online users in Canada; however some American research provides a starting point. Thomas and Streib (2003) suggest that citizen-initiated contacts with governments via the Internet in general are likely to be motivated by specific needs, and engaged in by individuals with higher socio-economic status. Chen and Dimitrova (2006) on the other hand, found that demographic characteristics had only limited influence on citizens' involvement in online civic activities, whereas other factors such as perceived personal benefit and political involvement exerted a greater influence on citizen engagement with government online.[1]

Using data from the 2005 Canadian Internet Use Survey (CIUS), this study examines patterns of Internet use related to accessing government information and services online. It begins by describing the Canadian Government On-Line (GOL) initiative and briefly reviews previous research in this area. A typology of Internet users is then created to investigate how those who access government information and services online differ from those who do not in terms of their Internet use behaviour in general; for example, e-commerce, number of activities, length of time online, frequency of use, and intensity of use. The reasons adult Canadians are not using the Internet to search for government information, and concerns about Internet privacy or security, are also discussed. Finally, a multivariate logistic regression model helps to disentangle the various factors influencing the use of the Internet for government online activities.

1.1 The Government On-Line (GOL) initiative

Launched in 1999 and formally completed in 2006, the Government On-Line (GOL) initiative was a key part of the Government of Canada's service delivery strategy of organizing services and information around the needs and expectations of Canadians, businesses and international clients. As a result of the GOL initiative, 130 of the most commonly used services have been available online since 2005. According to the 2006 Government On-Line report,[2] interactions with the Government of Canada went from approximately 470 million in 2001, to almost 1.1 billion in 2005, with online transactions accounting for 30% of all transactions. In addition, 71% of Internet users had visited a Government of Canada Web site during the previous twelve-month period.

Through GOL, a 'whole of government' approach was adopted in order to make the entire range of government services accessible, regardless of the channel being used (telephone, in-person, mail or Internet), or the department, agency or level of government that is responsible for provision of the service. Service Canada[3] is the Government of Canada's one-stop service delivery network, providing different modes of access, in conjunction with other departments and levels of governments, to a wide range of programs and services.

Canada is recognized as a world leader in e-government, as indicated by consistently high ratings in various international surveys and benchmarking studies. For example, Canada has been ranked in the top ten and often in the top two countries with respect to e-government assessments (Government of Canada 2006). With the GOL initiative now complete and many government services available to Canadians online, it is useful to analyze GOL with respect to the following questions: Who is the typical GOL user? In which activities are they engaged? For what purposes are they accessing government information? How frequently do they access government online services? Where do they reside? And for those who are online, but not accessing government services, why not? The answers to these questions will help to shed light on how government service delivery may evolve in the future.

1. The study conducted by Chen and Dimitrova (2006) had an important limitation: a small sample size that was restricted to Internet users who had participated in an online survey, which introduces a potential bias since non-respondents may have differed significantly from respondents.
2. See http://www.gol-ged.gc.ca/rpt2006/rpt/rpt00_e.asp.
3. See http://www.servicecanada.gc.ca.

1.2 The digital divide, self-efficacy and Internet use

The digital divide is commonly understood as the gap between information and communications technology (ICT)—notably the Internet—'haves' and 'have nots'. Likely correlates of this divide, such as education, gender, income and location, have been widely investigated (Sciadas 2002; OECD 2001; Fong, Wellman, Kew and Wilkes 2001). Now that Internet use within Canada has become more ubiquitous, the research focus is moving away from the factors influencing the divide, to the factors influencing the intensity and type of use among those who are already online. Hargittai (2003) and others (Lenhart et al. 2003; Montagnier and Vickery 2007) have suggested the existence of a 'second-level' digital divide among those who are already connected to and using the Internet. Among other factors, Hargittai (2003, p. 2) suggests that individual skill level—"the ability to efficiently and effectively find information on the Web"—may be an important factor in discriminating between individuals along this second divide.

Along the same lines, Internet self-efficacy—the belief in, or judgment of, one's ability to accomplish certain tasks online, such as finding information, or troubleshooting problems—has been suggested by Eastin and LaRose (2000) as an essential characteristic for novice users. For example, the use of the Internet requires a specific set of skills, such as establishing and maintaining a connection, and learning how to navigate and search for relevant information on the Web. Whether or not these skills are developed depends to a great extent on individual self-efficacy; that is, whether or not individuals believe they can successfully perform activities that are required for effective use of the Internet (Eastin and LaRose 2000).

One factor that has been found to be significantly related to Internet self-efficacy is previous Internet experience, which is also related to length of time spent using the Internet; for example, Eastin and LaRose (2000) have suggested that up to two years' experience may be required to achieve an ideal level of Internet self-efficacy. Access to a computer with an Internet connection in and of itself may not be sufficient to ensure usage, since psychological barriers may continue to hinder successful Internet interaction for some individuals (Eastin and LaRose 2000). Others have also argued that merely having access to an Internet-linked device does not equate with regular and effective use of the Internet (Chen and Wellman 2004).

Note to readers

This study uses data from the 2005 Canadian Internet Use Survey (CIUS) conducted by Statistics Canada in November 2005 as a supplement to the Labour Force Survey (LFS). The LFS excluded residents of the territories, inmates of institutions, persons living on Indian reserves, and full-time members of the Canadian Armed Forces. More than 30,000 Canadians aged 18 years and over were asked about their Internet use, including electronic shopping, during the previous 12 months. The CIUS includes a set of core information and communications technology (ICT) indicators as well as specific questions that begin to assess the impact of Internet use on Canadian society, reflecting specific policy interests. For example, respondents were asked questions on the extent and purpose for which they use the Internet to connect with their governments at the federal, provincial and municipal levels.

For information about businesses connecting with governments, see the article 'Canadian firms connect with government on-line' in http://www.statcan.ca/english/freepub/88-003-XIE/88-003-XIE2006003.pdf (Catalogue No. 88-003-XIE, vol. 8, no. 3).

An **Internet user** is someone who used the Internet from any location in the 12 months preceding the survey for personal non-business reasons. A **home-user** is someone who reported using the Internet from home, for the same reasons.

For more information about CIUS survey questions, definitions and methods, see http://www.statcan.ca/english/sdds/4432.htm.

For the purposes of this study, government online refers to the general types of activities related to obtaining information and communicating with Canadian governments (see Chart 2). In reality, government online includes 130 of the most commonly used informational and transactional services among Canadians. More information about these services can be found at: http://www.gol-ged.gc.ca/rpt2006/rpt/rpt00_e.asp.

Based on these findings, this study examines whether similar factors play a role; for example, whether having achieved a level of 'Internet comfort' is closely related to the use of the Internet for government online activities. For the purposes of this study, the number of online activities is used as a proxy for this level of comfort, since it is likely that individuals who engage in more online activities have reached or surpassed this 'comfort threshold', and in turn may be more likely to engage in other online behaviours requiring a certain level of Internet comfort. It is further hypothesized that GOL users are a relatively homogenous and sophisticated group of Internet users, who have reached this comfort level with the Internet, or, to use Eastin and LaRose's (2000) conceptualization, have achieved a certain level of self-efficacy, which then leads to usage of the Internet for a wider range of activities.

Although the CIUS was not designed to investigate attitudes or motivations for use or non-use of the Internet, it does track prior Internet use, as well as frequency and intensity of use. For example, respondents were asked whether or not they had ever used the Internet and those who answered "yes" were then asked to report for how many years they had been using it. In addition, individuals who used the Internet within the previous twelve-month period were asked how often they used the Internet within a typical month, and how many hours in a typical week they spent online. Responses to these questions are examined in this study to determine how GOL users differ from other Internet users.

2. Internet use in Canada

Of those Canadians who reported using the Internet during 2005, about 90% did so from home. These home-users were asked a series of questions about the specific purposes for which they used the Internet during the past 12 months. Among those using the Internet from home, the most common activities included emailing (91%), general browsing (84%), searching for information about weather or road conditions (67%), making travel arrangements (63%), and viewing news or sports (62%). During 2005, slightly more than half (52%) of home Internet users went online at some point to search for government-related information, and nearly one-quarter (23%) communicated with governments using the Internet.

In order to examine GOL Internet use, Canadians were divided into three groups based on their Internet use in general, and their specific government online usage: 'GOL users', accounting for approximately 8.2 million Canadians aged 18 and over, or about one-third of adult Canadians (33%) and over one-half (55%) of Internet users; 'other users' or 'non-GOL users', accounting for 27% of adult Canadians and 45% of Internet users; and 'non-Internet users', accounting for 32% of all adult Canadians[4] (see Box 1).

Box 1: Three groups of Internet users

GOL users: those who reported using the Internet from home to either search for government information, or to communicate with government in the 12 months preceding the survey.

Other users (non-GOL users): those who reported using the Internet from home but had not used it to search for government information or to communicate with government in the 12 months preceding the survey.

Non-Internet users: those who have never used the Internet, or used it in the past but did not use it during the 12 months preceding the survey.

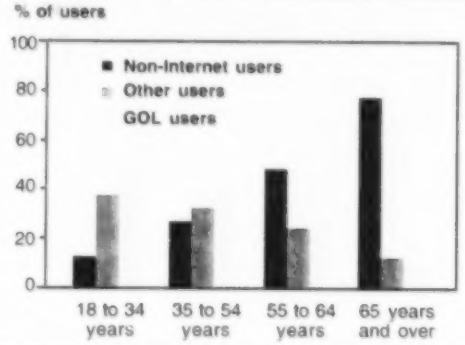
Approximately 7% of the target population, or 1.8 million adult Canadians made up a residual group consisting of respondents who reported using the Internet during 2005 for personal and non-business reasons, but not from home. These non-home users were excluded from the analyses. The filter questions (SU_Q03 and SU_Q04) that distinguish between 'GOL users' and 'non-GOL users' were asked only of respondents who had used the Internet from home. As a result, there was insufficient information to classify these respondents into one of the three groups. This particular demographic, compared with the others in the typology, was comprised of slightly younger respondents, with proportionately more women. They were more likely to have higher incomes and more education than non-users of the Internet, but less likely compared with home-users, perhaps due in part to their younger age. Those Canadians who had used the Internet but not from home in 2005 were, on average, 37 years old; 46% male; 18% university educated; and 21% from households with incomes greater than $80,000. In addition, over one-quarter (26%) of these non-home users resided in small towns or rural areas compared with 20% of home-users.

4. Unless otherwise noted, estimates compared between the different groups of Internet users in this study are statistically significant at the 95% confidence level ($p<.05$).

2.1 Variations in GOL use by socio-economic and demographic characteristics

As with Internet use in general, going online to search for government information or to communicate with government is related to a range of socio-economic and demographic characteristics. While average ages of GOL users and other users did not differ, there were substantial age differences between GOL users and non-Internet users. For example, of those aged 18 to 34 years, nearly one-half were GOL users and more than one-third (38%) were other users, compared with just 13% who were non-Internet users (Chart 1). Non-Internet users also comprised more than three-quarters (77%) of those aged 65 and over, whereas GOL users and other users made up a much smaller proportion of this age group (10% and 13%, respectively). In addition, of those aged 55 to 64 years, nearly one-half (48%) were non-Internet users, compared with slightly more than one-quarter (27%) who were GOL users, and another 24% who were other users.

Chart 1
Type of user by age group, 2005



Note: Only estimates between GOL users and other users in the '55 to 64 years' category are not significantly different.
Source: Statistics Canada, Canadian Internet Use Survey, 2005.

Other socio-economic variations are presented in Table 1. Proportionately more men than women were GOL users in 2005. In addition, compared with other users and non-Internet users, GOL users tended to have higher personal incomes and higher levels of education. Proportionately more GOL users (82%) were living in urban versus rural areas, compared with other users (79%) and non-Internet users (69%). However, as will be discussed in a subsequent section, when controlling for other factors in a multivariate logistic regression model, urban and rural differences between GOL users and other users disappeared. This important finding suggests that rural Internet users were just as likely to interact with government online as urban Internet users.

Table 1
Type of user by selected socio-economic and demographic characteristics, 2005

Selected characteristics	GOL	Other	Non-Internet
Average age	40	41	58
		% of users	
Male	53	45	49
Married/common-law	66	64	63
University degree	35	21	7
Employed	76	74	43
Children under 18 years old in the household	43	42	21
Urban	82	79	69
Personal income > $46,000	36	27	13
Household income > $80,000	44	36	13

Source: Statistics Canada, Canadian Internet Use Survey, 2005.

2.2 Variations in GOL use by Internet use characteristics

Do GOL users differ from other users in terms of their Internet use characteristics? Examining Internet use in terms of breadth and depth revealed distinct differences in patterns of use between GOL and other users. GOL users spent more time online, were online more frequently, and participated in a larger number of online activities, compared with other users (Table 2). For example, a higher proportion of GOL users (75%) reported accessing the Internet daily compared with other users (54%). A higher proportion of GOL users (55%) compared with other users (36%) also reported spending more than five hours per week on the Internet. In addition, slightly more GOL users (84%) than other users (78%) reported accessing the Internet from home using a high speed connection in 2005. GOL users also appeared to be more experienced Internet users, having been online for a longer period of time.

Table 2
Type of Internet user by selected Internet use characteristics, 2005

Selected characteristics	GOL	Other
Average number of online activities	10	7
	% of users	
Duration of Internet use (online 5 years or more)	76	55
Frequency of Internet use (daily)	75	54
Intensity of Internet use (5 or more hours per week)	55	36
Connection (cable, satellite, high speed)	84	78
Breadth of Internet use (10 or more activities)	60	27
Electronic banking	69	45

Source: Statistics Canada, Canadian Internet Use Survey, 2005.

In terms of the number of activities in which GOL users were engaged while online, nearly two-thirds indicated that they had participated in 10 or more activities, compared with just over one-quarter of other users. The average number of activities also varied by user type (Table 2).

In addition, more detailed information about the online experience of GOL users can be observed from the data. For example, GOL users were more likely to purchase goods or services over the Internet than other users (54% versus 31%), and, among those who purchased goods or services online, GOL users were more likely to pay by credit card (41% versus 23% of other users). A similar pattern held true for Internet window shopping[5]—more than two-thirds (69%) of GOL users reported using the Internet to window shop for goods or services, compared with less than half (44%) of other users.

Although for the most part men and women appeared to be equally connected in terms of access to the Internet, there were differences in terms of the frequency and intensity of use (Statistics Canada 2006). Among GOL and other users, a higher proportion of men reported being online at least once a day, compared with women (Table 3). Similarly, proportionately more men than women reported being online for five or more hours in a typical week among both groups of users. Other research confirms these gender differences, finding that men tend to be online more frequently, and once online, spend more time, on average, than women (Fallows 2005). Once online however, men and women did not differ significantly in their average number of activities, either among GOL users (12 versus 11, respectively) or other users (8 versus 7, respectively).

3. Examining the GOL experience

GOL users—those who used the Internet from home to search for government information or to communicate with government—represented more than 8 million adult Canadians (or 33%) in 2005. These users were asked more detailed questions about their GOL experience. While the majority of GOL users reported searching for government-related information (72%), a substantial proportion also used it to access information on government programs or services online (Chart 2). In addition, about one-half reported downloading government forms, while roughly one-quarter submitted a completed form, used the Internet to file their income tax,[6] or communicated with government departments or elected officials.

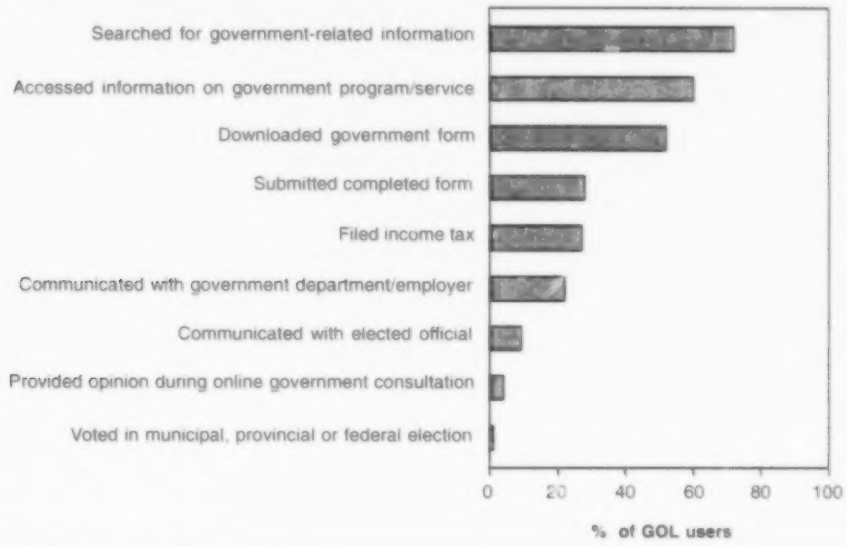
Table 3
Type of Internet user by selected Internet use characteristics and sex, 2005

	GOL		Other	
	Men	Women	Men	Women
	% of users			
Duration of Internet use (online 5 years or more)	79	72	57	54
Frequency of Internet use (daily)	77	70	55	50
Intensity of Internet use (5 or more hours per week)	59	49	40	31
Breadth of Internet use (10 or more activities)	65	54	31	22
Purchased goods or services online	57	50	33	30
Window shopped	72	66	46	42

Notes: Estimates between men and women in the 'other' category are not significantly different.
Source: Statistics Canada, Canadian Internet Use Survey, 2005.

5. The term 'window shopping' refers to the activity of browsing the Internet to compare products and/or services, look up product descriptions or specifications, check product availability, and obtain price quotes, without placing an Internet order.
6. Tax-filing here includes *Netfilers* only; excluded are those who may have filed electronically through a tax preparation service (*e-file*).

Chart 2
Proportion of GOL users by GOL activity, 2005



Source: Statistics Canada, Canadian Internet Use Survey, 2005.

The majority of GOL users reported using the Internet to contact the federal government (62%); however, slightly more than one-half (51%) also reported contacting provincial levels, and more than one-quarter indicated that they had contacted a municipal level of government (28%). Most GOL users indicated that they used the Internet to search for information on government programs or services in Canada on a monthly (26%) or less frequent (55%) basis; less than one in ten (7%) used the Internet for this purpose on a weekly basis. This makes sense as this type of use is more likely to be episodic than regular; motivated by specific needs such as downloading an application form or filing income taxes (Thomas and Streib 2003).

3.1 Reasons for not connecting with government online

Other users—those who reported using the Internet but not to search for government information or to communicate with government—were also asked additional questions about why they did not use the Internet to connect with government. The two main reasons cited by the majority of other users were that they either had no need or were not interested (Chart 3). This perceived lack of need or lack of interest in using the Internet to connect with government could also be related to a lack of awareness about online government services. For example, public opinion research in 2006 found that only about one-half of Canadians reported a moderate degree of familiarity with federal government services offered over the Internet, and only 7% indicated a high degree of familiarity (EKOS Research Associates 2007).

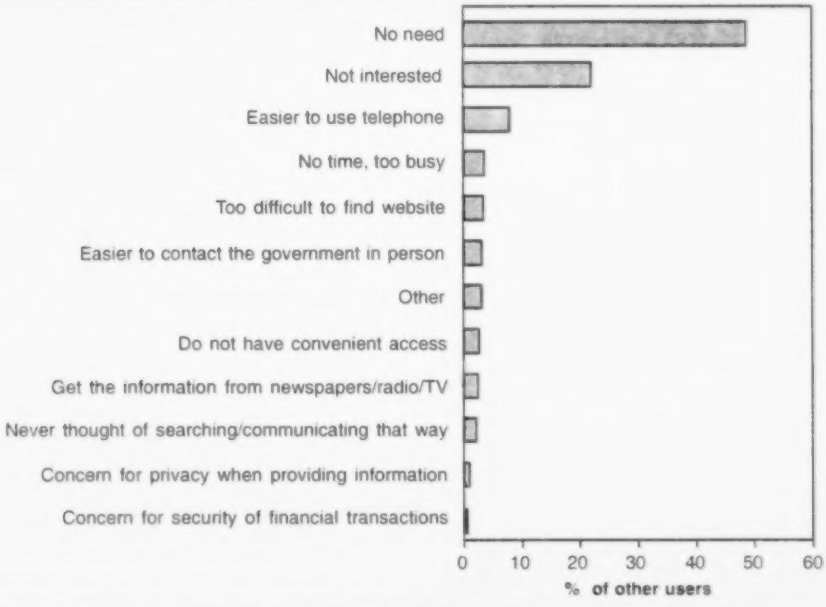
Alternatively, these users may prefer to connect with government in more traditional ways, such as in-person visits or by telephone; for example, 8% of other users indicated that the reason they did not use the Internet to access government services was because they thought it would be easier to contact the government using the telephone. Concern for confidentiality, security or privacy did not appear to be a significant factor for this group.

As for non-Internet users, over one-third cited that the main reasons for not using the Internet from home were lack of interest and having no need or use for it—the same reasons cited by the other users group. More than one in ten non-users indicated that cost and lack of skills were also factors in preventing them from using the Internet from home. As with other users, concerns about confidentiality, security or privacy did not appear to be a significant reason for this group, as it was cited by less than 2% of non-Internet users.

3.2 Specific privacy and security concerns

As noted above, general confidentiality, security or privacy issues were not the main reason cited by most non-users and other users for not accessing government services online. However, specific Internet privacy and security issues did generate more concern for both Internet users and non-users.

Chart 3
Proportion of other users citing main reasons for not connecting with GOL, 2005



Source: Statistics Canada, Canadian Internet Use Survey, 2005.

Overall, a higher proportion of non-Internet users were very concerned about Internet privacy and security compared with GOL and other users. Proportionately fewer GOL users reported being very concerned about security issues related to such activities as banking transactions, credit card use, and providing personal financial or non-financial information online, in contrast to other users and non-users. However, slightly more GOL users than other users reported being very concerned about privacy on the Internet—for example, having people find out what websites you have been visiting or reading your email (Chart 4).

The fact that fewer GOL users reported being very concerned about most Internet security issues, compared with other users and non-users, may suggest that GOL users are a more sophisticated and experienced group of Internet users, with a greater awareness of privacy and security issues, a better understanding of the risks and better equipped to deal with the risks. The same argument may also help to explain why a higher proportion of GOL users than other users expressed concern about privacy on the Internet; as a more sophisticated and experienced group, GOL users may choose to engage in certain activities or behaviours despite their concerns, perhaps because they feel more confident that the measures they have taken to protect themselves are sufficient. Other users simply may not be aware of the protective measures that can be taken or may not know how to implement them.

In fact, according to public opinion research, there is a gap between the threats that exist online and the ability of the average citizen to respond to such threats (EKOS Research Associates 2007). For example, approximately one-quarter of Internet users did not know how to block 'cookies', a basic proxy for knowledge of protective measures. In addition, only 10% of Internet users indicated that they were 'very good' in their ability to take appropriate precautions regarding online threats.

If fewer GOL users reported being very concerned about Internet security issues, compared with other users and non-users—yet still engage in GOL activity even when they express concern about Internet privacy—it can be assumed that this group of users has reached a certain level of comfort with the Internet. Once this threshold has been reached, GOL users may be more inclined than other users to engage in online services that require the use of a credit card or the provision of financial/personal information to government departments over the Internet.

The proportions of men and women expressing a high degree of concern about these issues differed, especially with respect to activities involving a financial component. Significantly more women than men were very concerned, across all groups, about issues such as conducting banking transactions, using a credit card, and giving personal financial information to government departments over the Internet.

4. Factors associated with GOL use: A multivariate approach

In order to test the effects of various socio-demographic and Internet use characteristics on the likelihood of using the Internet to connect with government, a logistic regression model was used (see Box 2). Variables were selected based on a review of available literature, as well as the results of the descriptive analysis.

4.1 GOL users online longer, more frequently, and for a wider variety of activities

The results from the model show that, all things considered, the primary predictor of whether an Internet user will search for government information online, or communicate with government using the Internet, was the number of activities in which the individual was engaged. As the number of activities

Box 2: The multivariate model

The model's independent variables included: age; sex; marital status; presence of children under the age of 18 in the household; education level; geographic location; duration of use (measured in number of years online); frequency of use; intensity (measured in hours online per week) and breadth of use (measured by number of reported Internet activities). To avoid multi-collinearity in the model, income was not included due to a high correlation with education.

The independent variables, followed by the reference groups in parentheses, are:

- Age (less than 45 years)
- Sex (Female)
- Marital Status (Not married)
- Presence of children under the age of 18 in the household (No children)
- Education level (High school or less)
- Geographic location (Rural)
- Duration of Internet use (Online less than 5 years)
- Frequency of Internet use (Online less than once a day)
- Intensity of Internet use (Online less than 5 hours per week)
- Breadth of Internet use (Between 1 and 9 Internet activities)

Each of the variables was entered into the model in one step to determine their unique effect, while the effects of the others were being held constant. The final model was found to be significantly better than the 'null' model (intercept only), with most of the variables exhibiting predictive ability for the behaviour in question, namely, the use of the Internet to access GOL information.

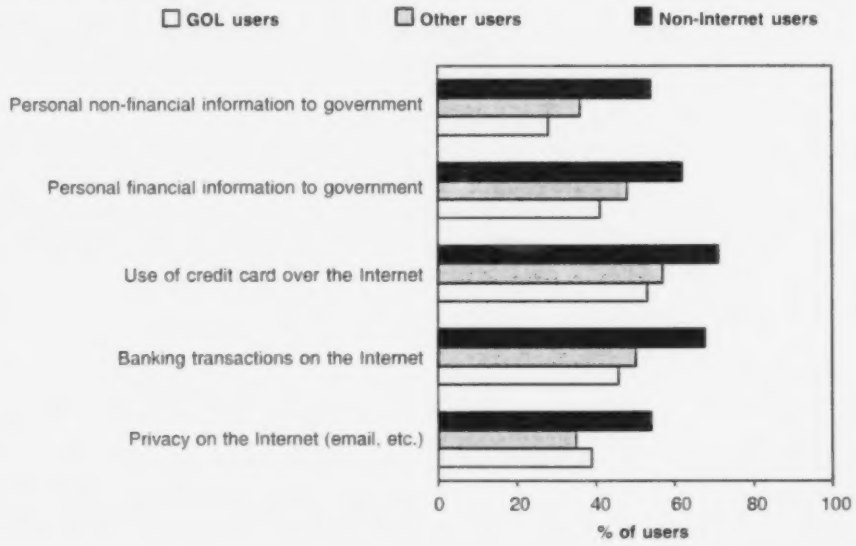
Interpreting odds ratios

The purpose of logistic regression is to estimate the probability of an event occurring (for example, accessing government information online) based on a set of explanatory variables. This technique allows the relationship between each explanatory variable and the event to be examined, while holding all other specified variables constant. Differences between population groups are expressed in terms of odds ratios.

The odds of an event are defined as the ratio of the probability that an event occurs, to the probability that it fails to occur. In this case, the event being considered is "use of the Internet to access government online information". Odds ratios indicate whether certain variables increase or decrease the odds of using the Internet to access government information, compared to a reference group, controlling for all other explanatory variables in the model (see Chart 5).

An odds ratio of 1 represents equal odds for the comparison groups of engaging in this activity. Odds ratios with values below 1 indicate less chance of accessing government online information, and odds ratios larger than 1 represent an increased chance. This article used bootstrap weights to estimate the standard errors to account for the complex sample design used in the survey. The "don't know/refused" responses were excluded from the analysis.

Chart 4
Proportion of users very concerned about Internet privacy and security, 2005



Note: Respondents were asked whether they were 'Not at all concerned; Concerned; or Very concerned' about Internet privacy and security matters. The percentages illustrated here reflect only the 'Very concerned' responses.
Source: Statistics Canada, Canadian Internet Use Survey, 2005.

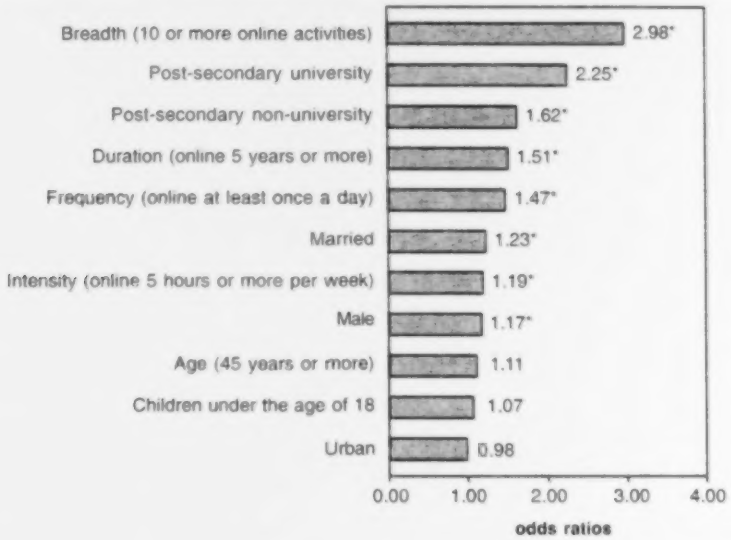
increased (from nine or fewer, to ten or more), so did the odds of an Internet user connecting with government via the Internet (odds increased by 3 times) (Chart 5). The activity variable used in this model is considered a proxy indicator for breadth of use—that is, while frequency and hours capture intensity of use, the activity variable appears to suggest a level of sophistication with Internet use, based on the number of activities for which the Internet is being used. A respondent who is capable of conducting a variety of activities via the Internet, such as buying goods or services, conducting electronic banking, paying bills, making travel arrangements, or researching investments, for example, is considerably different from the novice user who is just managing the use of email from home. As pointed out by Eastin and LaRose (2000), Internet use requires something more than simply computer skills—a level of interactivity is required that goes above and beyond basic computer literacy.

In addition to the number of activities variable, a number of other demographic factors played a significant role in determining whether or not an Internet user accessed government information online. These included marital status and gender. The relative influence of these factors varied. The odds of using government online services were slightly higher for men and for married individuals (Chart 5). Not surprisingly, education was an important predictor—with post-secondary education, the odds of GOL use increased by 1.6, compared with having a minimum of a high school education alone. Similarly, for an individual with a university degree, the odds of GOL use more than doubled compared with having only a high school diploma or less.

The presence of children under the age of 18 was not found to be a significant predictor of using the Internet to access government-related information. In addition, geographic location—whether the GOL user resides in an urban or rural location—did not have a significant influence on the use of government online services. This is of particular interest, since geographic location has been found to have a significant influence on general Internet use; urban dwellers are more likely to use the Internet than their rural counterparts (McKeown, Noce and Czerny 2007). The analysis here suggests that urban-rural location may be an important factor influencing Internet use, but it does not influence specific GOL use. In other words, rural Internet users were just as likely as urban Internet users to access GOL.

Other important predictors in the model included the duration of online use, as measured by the number of years an individual had been online. The odds of GOL use increased by 1.5 for individuals who had been online for five years, compared with those who had been connected for less than five years. Frequency and intensity of use also significantly increased the odds of Internet use to access government online information (odds ratios of 1.5, and 1.2, respectively).

Chart 5
Odds ratios for selected socio-demographic and Internet use characteristics associated with GOL use



Note: * denotes statistical significance at the 95% confidence level (p<.05).
Source: Statistics Canada, Canadian Internet Use Survey, 2005.

5. Summary

The Internet is fundamentally changing the way Canadians are conducting their lives. For example, the Internet has become an important channel for communicating with governments and searching for government information. This study examined responses to questions asked by the 2005 Canadian Internet Use Survey (CIUS) on the use of the Internet for these types of activities. An estimated one-third of adult Canadians (8.2 million), or 55% of home Internet users, went online for GOL-related reasons during 2005. This study identifies a number of important factors associated with accessing government information online.

In general, use of the Internet to search for government information or to communicate with governments reflects a mix of socio-demographic, as well as Internet use, characteristics. In particular, relatively more men than women were GOL users. Differences between men and women were also apparent in the frequency and intensity of their Internet use. Some of these differences may be explained from a time-use perspective; for example, in a study on gender roles (Marshall 2006), women reported being more time-stressed than men, overall. This sense of time pressure may influence how often and for how long women use the Internet from home, as well as the types of online activities in which they choose to engage.

Not surprisingly, education also made a difference in distinguishing GOL and non-GOL users. Individuals with higher levels of education were much more likely to use the Internet to access government information online than those with lower levels of education.

Clear differences also existed between GOL and other users in terms of frequency of general Internet use, hours of use, length or duration of online experience, and the number of activities in which users were engaged while online. For example, the 'number of activities while online' variable was significantly associated with the odds of accessing government information online. In addition, frequency of use and duration of connectedness (number of years online) were significantly associated with GOL use. This supports the hypothesis that GOL use requires a certain level of sophistication or 'Internet comfort'.

Another interesting finding was that although urban areas had a higher proportion of GOL users compared with rural and small town areas, holding other factors constant, this variable was not a significant factor associated with GOL use. Similarly, age and the presence of children under the age of 18 in the household were not significant predictors of GOL use. These are important factors to bear in mind for the future of government service delivery.

The most common reasons for accessing GOL, reported by over half of GOL users, were searching for information, accessing information on a program or service, and downloading a form. Among Internet users who did not access GOL during 2005, the most common reasons given were that they had no need or no interest in these services, and for some individuals, it was simply easier to use the telephone to contact the government. It is clear that a multi-channel approach is important to maintain, and that the more traditional ways of connecting with government continue to be offered. A large proportion of adults, while connected to the Internet, were not using the Internet as a means to connect with government services, while one-third of adults were not online at all.

One concern arising from the findings is how to bridge what has become known as the 'second-level' digital divide (Montagnier and Vickery 2007; Hargittai 2003; Fong, Wellman, Kew and Wilkes 2001; Chen and Wellman 2004) that appears to differentiate GOL users from other users. Thomas and Streib (2003) found that the use of government online services was not equally distributed among all segments of the population in the state of Georgia. For example, in their study, GOL users had higher incomes, were better educated, more likely to reside in urban areas, and less likely to be part of a visible minority. Similar patterns were observed here, as GOL users tended to have higher incomes and higher levels of education than other users and non-users. In addition, Canadian GOL users were more likely to be male than female. The challenge facing all levels of government will be addressing the reasons for not using the Internet that appear to be related to such socio-demographic factors. Overcoming concerns about specific privacy and security issues, as reported by relatively high numbers of both Internet users and non-users alike, represents an additional challenge.

Although not an exact comparison, Dryburgh (2001) estimated that 41% of Internet users had used the Internet to access information on government programs or services in 2000.[7] Thus, the rate of GOL use had roughly increased from just over four out of every ten Internet users in 2000, to more than one-half (55%) in 2005. Over the same period, the proportion of Canadians using the Internet increased from 53% to 68%. Results from the 2007 Canadian Internet Use Survey will allow us to continue to track the growth of GOL use among adult Canadians in order to better inform policies related to improving government service delivery.

7. Estimates from the 2000 General Social Survey (GSS, Cycle 14) were obtained by asking Canadians aged 15 years and older who had used the Internet from any location whether they had ever done so to access information on government programs or services. And with the prevalence of Internet use much higher among younger persons, the difference in target populations may serve to underestimate the increase in the overall Internet use rate.

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